

CLAIMS

1. A process for the loading of fuel into an aircraft  
(1) on the ground, said aircraft comprising fuel tanks  
5 (11 to 19) distributed in the wings (3, 4) and the  
fuselage (2) and at least one fuel tank (22) disposed  
in the tail, said process making it possible at each  
instant of the loading to keep the center of gravity of  
said aircraft in an authorized range (25) of positions  
10 along the longitudinal axis (L-L) of said aircraft and  
taking into account:

- the cargo weight MC, without fuel, carried by the aircraft;
- the position XC, within said authorized range (25),  
15 of the center of gravity of said aircraft on the  
ground, when only said cargo weight MC is loaded and  
distributed in the aircraft; and
- the weight of fuel PFQ necessary for the  
accomplishment of the mission that said aircraft is  
20 to fulfill with said cargo weight MC,  
wherein:

- an optimal position CGt to be reached for said  
center of gravity is determined, within said  
authorized range (25), when said cargo load MC and  
25 said weight of fuel PFQ necessary for the mission  
are loaded on board said aircraft;
- the relation (R) linking the variation in position  
of the center of gravity of the aircraft to the  
variation in weight of fuel inside said tail tank  
30 (22) is determined;
- weights of fuel are poured into said tanks, the  
sum of which weights constitutes a provisional  
loading weight MP, which is less than said weight  
of fuel PFQ necessary for the mission and which,  
35 added to said cargo weight MC, causes the center  
of gravity of the aircraft to go from said  
position XC corresponding to the latter to a  
provisional position XP, such that the feeding  
into said tail tank of a weight of fuel equal to

the difference  $\Delta$  between the weight of fuel PFQ necessary for the mission and the provisional loading weight MP causes, in accordance with said relation (R), said center of gravity of the aircraft to go from the provisional position XP to the optimal position CGt; and

5                   - a weight of fuel equal to said difference  $\Delta$  is poured into said tail tank (22).

10    2.    The process as claimed in claim 1, wherein said provisional loading weight MP results from weights of fuel poured only into said tanks (11 to 19) of the wings and of the fuselage.

15    3.    The process as claimed in claim 1, wherein said provisional loading weight MP results from weights of fuel poured into said tanks (11 to 19) of the wings and of the fuselage, as well as into said tail tank (22).

20    4.    The process as claimed in claim 1, wherein at least some of said weights of fuel are poured by successive fractions into the corresponding tanks.

25    5.    The process as claimed in claim 1, wherein said cargo weight MC used and the center of gravity position XC used are default values of the actual cargo weight MC\* and of the actual position XC\* of the center of gravity and wherein, after loading of the tanks with the weight of fuel PFQ necessary for the accomplishment of the mission and obtaining of the optimal position CGt for the center of gravity on the basis of said default values MC and XC, the weight of

30    fuel PFQ is redistributed by transfer between said tanks, with partial transfer from said tail tank into said other tanks, so as to take account of said actual values MC\* and XC\* while keeping the center of gravity at said optimal position CGt.

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6. The process as claimed in claim 1,  
wherein in the case where, after loading of said tanks  
with the weight of fuel PFQ necessary for the  
5 accomplishment of the mission and reaching of the  
optimal position CGt for the center of gravity, said  
weight of fuel PFQ must be increased by an additional  
weight dPFQ, said additional weight dPFQ is distributed  
into said tanks while keeping the center of gravity at  
10 said optimal position CGt.

7. The process as claimed in claim 6,  
wherein said additional weight dPFQ is distributed only  
into said tanks (11 to 19) of the wings and of the  
15 fuselage.

8. The process as claimed in claim 6,  
wherein said additional weight dPFQ is distributed into  
said tanks (11 to 19) of the wings and of the fuselage,  
20 as well as into said tail tank (22).